

Abstract

A device and a method capable of being carried out therewith for, preferably, anisotropically etching a substrate (10), in particular, a patterned silicon body, with the assistance of a plasma (14), is proposed. In the process, the plasma (14) is produced by a plasma source (13) to which a high-frequency generator (17) is connected for applying a high-frequency power. Moreover, this high-frequency generator is in communication with a first means which periodically changes the high-frequency power applied to the plasma source (13). Besides, provision is preferably made for a second means which adapts the output impedance of the high-frequency generator (17) to the prevailing impedance of the plasma source (13) which changes as a function of the high-frequency power. The proposed anisotropic etching method is carried out in separate and alternating etching and polymerization steps, a higher high-frequency power of up to 5000 watts being, at least temporarily, applied to the plasma source (13) during the etching steps than during the deposition steps. The proposed device is also suitable for igniting a plasma (14) and for adjusting upward or pulsing a plasma power from a starting value to up to 5000 watts.

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Figure 1